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JUL 26 1999

MEMORANDUM FOR EXECUTIVE DIRECTOR, DEFENSE SCIENCE BOARD

SUBJECT: Defense Science Board (DSB) Task Force (TF) Report on Advanced Modeling and Simulation (M&S) for Analyzing Combat Concepts in the 21st Century, May 1999

We appreciate the opportunity to comment on the findings and recommendations of the DSB TF's report on Advanced M&S for Analyzing Combat Concepts in the 21st Century.

We concur with the report's findings and observations that the Department's warfighters need to become knowledgeable, demanding, articulate customers for M&S because it is only through the demands of that community that real progress in building the needed tools can be made. The balance between the so-called "technology push" and "requirements pull" in the Department's M&S applications and tools favors push over pull, with the technologists having to divine requirements because warfighters are focused predominantly on near-term issues. Today's M&S tools, while far from perfect, adequately represent the physical world and the impact of physics-based weapons; but lack the scientific underpinnings to satisfactorily represent individual or group human behavior. This deficiency seriously limits our ability to represent both the systems within systems and their effects in a spectrum of human-interaction intensive areas such as information warfare, communications, command and control, HUMINT, C4ISR, situational awareness, and decision-making processes. We also agree that today's M&S tools, in general, do not have the flexibility to foster their use in examining new and innovative concepts, doctrine, tactics, techniques or procedures. Some technical approaches, such as the inherent flexibility of the High-Level Architecture, may provide a means to partially achieve these capabilities, but current models and simulations do not easily support innovative applications.

To better focus the Department's M&S communities on this report's findings and recommendations, I will ask the DoD Executive Council for Modeling and Simulation to work with the report co-chairs and to consider specific initiatives that addresses the reports findings and recommendations.

Additional observations and comments are attached for your consideration.

for Delores M. Etter
Deputy Under Secretary of Defense
(Science & Technology)

Attachment:
as stated

cc:
USD(A&T)
PDUSD(A&T)
DoD EXCIMS Members
DDR&E
Director, DARPA

Office of the Deputy Under Secretary of Defense (Science and Technology)
Observations and Comments on the May 1999
Defense Science Board (DSB) Task Force (TF) Report on Advanced Modeling and Simulation
(M&S) for Analyzing Combat Concepts in the 21st Century

The need for M&S-knowledgeable, perceptive, articulate, demanding warfighter-customers and for M&S with the adaptable flexibility to support innovative and "out-of-the-box" thinking are recurring themes throughout this report. A number of implications derive from these themes.

One implication of this report is that warfighters may need to be exposed to the requirements development process as a routine part of their career development process at a practical level—to learn to develop Mission-Needs-Statements and Operational Requirements Documents and similar documents in the requirements process. The Defense Acquisition University, in conjunction with the Joint Staff, J-7, Joint and Service junior, mid, and senior level Professional Military Education schools, might review their curriculums to determine the level of effort devoted to practical aspects of the requirements development process and consider how to enhance training and education in this vital area.

Any Departmental effort to create the software support tools capable of providing rapid insight and innovation envisioned in this report should be fully integrated with representatives from the analytical and technology communities as well as those from the warfighter community. If the analysts and technologists are not included from the conceptual phase, the development process is likely to be slowed or implemented incorrectly. Analysts and technologists need to fully comprehend the warfighters concept and intent throughout the development cycle or the M&S tools may be implemented incorrectly or delivery needlessly delayed.

Warfighters, in their role as demanding customers, may well know the characteristics of the M&S tool(s) they want but may not know if they already exist. Hence, another implied requirement is the need for a readily accessible, available and relatively easy means to determine what exists—a virtual library of M&S information. This need will, ultimately, be met by the DoD M&S Resource Repository (MSRR)--a system within the DoD Information Repository System. It will include a complete encyclopedia of existing DoD-owned and used M&S tools that provides detailed information and data, such as the functions, capabilities, uses, operating system requirements, verification, validation and accreditation histories, etc. When fully operational, the MSRR will provide warfighter-customers with a search and discovery tool able to identify existing M&S tools that might meet the customer's needs or be adapted to do so as an alternative to building a new M&S capability. The MSRR exists today and has the potential, when robustly populated and interconnected, to fulfill this capability.

The Task Force concentrated its efforts predominantly on Army and Air Force organizations, and, to a lesser extent on joint and OSD organizations. They visited only a single Navy facility, and no intelligence community organizations or facilities. These oversights may have resulted in an incomplete assessment of all significant and relevant issues.

The inclusion of the Battle Labs in Appendix C without further explanation of their disparate capabilities may create the incorrect impression that these facilities are all equally capable, robust organizations. However, the Battle Labs vary significantly in their individual resourcing, capabilities, staffing, and funding, with some amounting to little more than new missions and functions that have been grafted onto existing organizations without benefit of additional resourcing to address the new requirements.

Attachment